

# Port Houston Sustainability and 2050

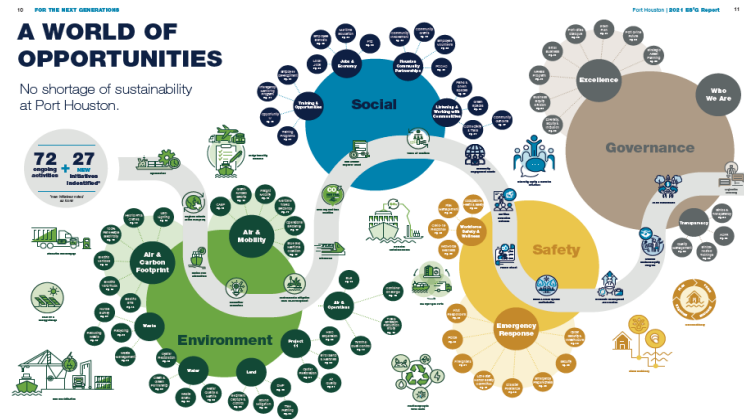
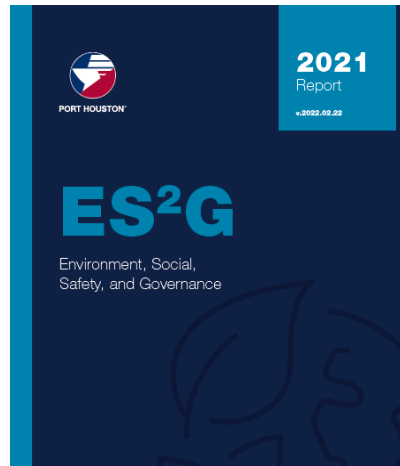
Galveston Bay Council  
January 18, 2023



PORT HOUSTON™

# SUSTAINABILITY PRIORITIES AND 2050 UPDATE

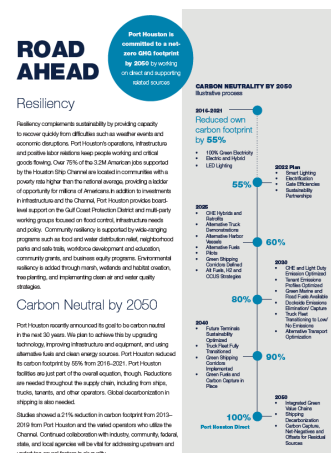
November 2021



**Port Commission Questions:**

*How are we prioritizing and executing the Action Plan?*

March 2022



*What does the path to 2050 look like in more detail?*

# ACTION PLAN PROGRESS

## Bayport Port Road Expansion

### LEADING

1. Equipment Electrification
  - Added 26 More Hybrid RTG orders to Double Hybrid Fleet
2. Road & Rail Network Efficiencies
  - BPT Road Widening and U-Turn – BCT Gate Expansion and Road Debottlenecking – Accelerating TXDOT Region Projects
3. Maritime Education Outreach
  - 900 Students in 5 ISD's, Adding 2 More ISD's, and Partnerships at 6 Universities and JC's
4. Community Engagement
  - Dozens of Stakeholder Meetings – Regular HPCC Meetings – Outreach Events – Habitat for Humanity
5. Parks & Green Spaces Revitalization
  - Programs with Houston and East Harris County worth \$2 Million
6. Economic Development Job Creation
  - Engaged 150 partners to attract new businesses – FTZ 84 Served 200 Companies and 12,000 jobs
7. Diversity, Equity & Inclusion
  - Launched 5-year program and 14 initiatives – Employee Engagement – Town Halls – Inclusive Leadership Program
8. S/MWBE Business equity Program
  - Enrolled over 1000 SMWBE's – Graduated 50 Companies in two Opportunity U Cohorts



### Business Equity Opportunity U Cohort





# ACTION PLAN...

## PARTNERING

- |                                                  |                                                                                                                             |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 9. Alternative Fuel Drayage                      | • First Zero-Emission Drayage Truck – Active Discussions with Hydrogen, Battery and CNG                                     |
| 10. Solar Energy Storage                         | • Exploratory Discussions with Solar Providers                                                                              |
| 11. Marine Fuel Alternatives                     | • Exploratory Discussions for LNG Bunkering and Ammonia Market Development                                                  |
| 12. Dockside Emissions Reduction                 | • Exploratory Discussions for Portable Electricity Shore Power and Shiplside Emissions Capture                              |
| 13. DERA/TERP Repower Grants                     | • Advanced Tug Repower Discussion – Active Discussion with TCEQ to Enable Electric Trucks                                   |
| 14. Plastics Recycling                           | • Monitoring Industry Developments – Plastics Free Month Awareness Campaign – Nurdle Surveys                                |
| 15. Harbor Street                                | • Completed Agreement for Property Transfer – Complemented by Hidalgo Park Enhancements                                     |
| 16. Parks & Green Spaces Partnering              | • Houston Tool Bank – Adopt-a-Beach Cleanups – Other Programs                                                               |
| 17. Legislative Advocacy                         | • Project 11 IIJA Funds – Grant Applications and Wins – 3-Prong Focus on Supply Chain, Social Equity, Environmental Quality |
| 18. Environmental Mitigation Bank Co-Development | • Plans on-hold pending project sizing                                                                                      |

## First Zero Emission Drayage Truck June 2022



## Port Houston-Shell Sustainability MOU Sept 2022

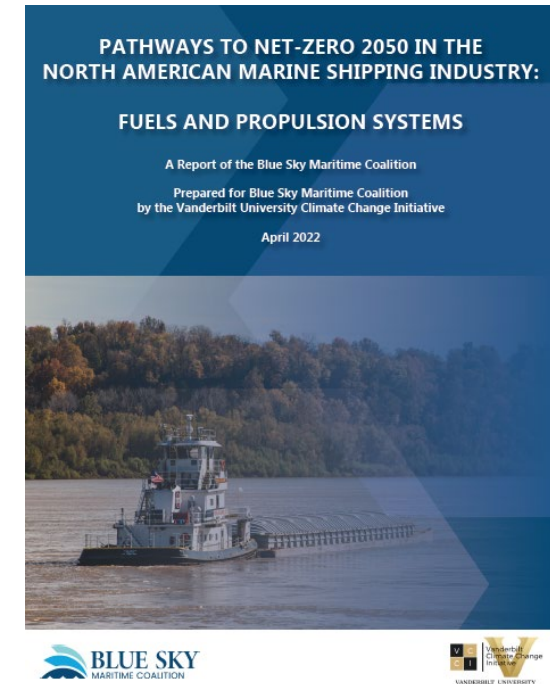


# ACTION PLAN...

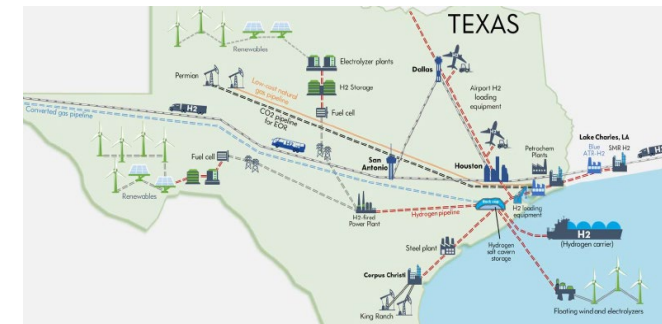
## SUPPORTING

- 19. Blue Sky Maritime Coalition Decarbonization
  - Board Participation – Defining Green Shipping Corridors and Pathways to Zero in Shipping – Added 100 Companies to Coalition
- 20. IEA Hydrogen Ports Coalition
  - Global Sharing – Houston Case Study for Hydrogen – Call-to-Action for Policy and Infrastructure Movement
- 21. Innovation/Incubators
  - Regular Contributor to ION and Greentown Lab discussions/Panels
- 22. Intermodal
  - Regional Dray Strategies – Freight Shuttle Long Range Planning
- 23. TCEQ Monitors
  - Pleasantville ACTS application for TCEQ Air monitors for "Defining Baseline Urban Air Toxics in Houston"
- 24. Synchronizer
  - Working Group on Cost and Emission Reduction – Working with Carriers on voyage / queuing efficiencies
- 25. Regional Climate Action Plan
  - Monitoring and Coordinating
- 26. Flood Resiliency
  - Working Groups for Flood Tunnels and Sedimentation Control
- 27. Storm Resiliency
  - Board participation on Gulf Coast Protection District

## Blue Sky Sponsored Viewpoint on Net Zero Shipping



## Illustrative HETI Hydrogen Hub



# ROADMAP TO 2050: CONSIDERATIONS

- “Carbon Neutral” vs “Net Zero”

**HOUSTON** - Port Houston recently announced its goal to be **carbon neutral** in the next 30 years. Port officials plan to **achieve a net-zero** GHG footprint by 2050 by upgrading technology, improving infrastructure and equipment, and utilizing alternative fuels and clean energy sources.

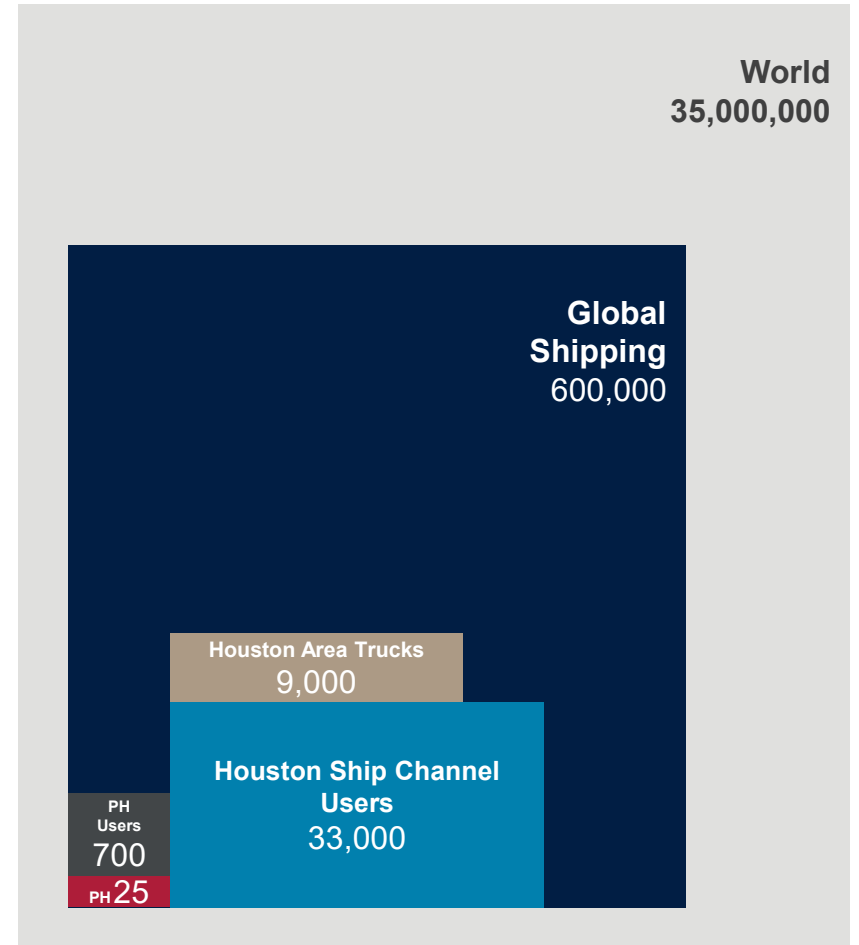
- Emissions Definitions:

- Scope 1 Direct
- Scope 2 Electricity
- Scope 3 Suppliers
- “Beyond Value Chain”: All Others, Vessels, Trucks, et al
- Carbon Footprint: Controllable Scopes 1&2

- Size of the Prize

- Bigger picture outside Port Houston’s “Lead”
- Underscores need for “Partner” and “Support”
- Regional Prosperity and Environmental Leadership through People, Partnerships, Infrastructure, Stewardship

## Illustrative Proportions of Carbon Footprints (1000 Tons)



Values are Estimates / Block Sizes Not To Scale

# ROAD AHEAD

2022 GOAL: DEVELOP AND OUTLINE PATH TO CARBON NEUTRALITY BY 2050

*Port Houston is committed to a net-zero GHG footprint by 2050 by working on direct and supporting related sources*

## Illustrative outline (in process)

### 2016-2021

*Reduced Own Carbon Footprint 55%*

- 100% Green Electricity
- Electric and Hybrid
- LED Lighting

### 2022 Plan

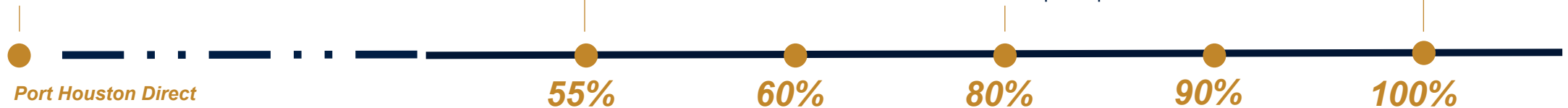
- Smart Lighting
- Electrification
- Gate Efficiencies
- Sustainability Partnerships

### 2030

- CHE and Light Duty Emission Optimized
- Tenant Emissions Profiles Optimized
- Green Marine and Road Fuels Available
- Dockside Emissions Elimination/ Capture
- Truck Fleet Transitioning to Low/No Emissions
- Alternative Transport Optimization

### 2050

- Integrated Green Value Chains
- Shipping Decarbonization
- Carbon Capture, Net-Negatives and Offsets for Residual Sources



### 2025

- CHE Hybrids and Retrofits
- Alternative Truck Demonstrations
- Alternative Harbor Vessels
- Alternative Fuels Pilots
- Green Shipping Corridors Defined
- Alt Fuels, H2 and CCUS Strategies

### 2040

- Future Terminals Sustainability Optimized
- Truck Fleet Fully Transitioned
- Green Shipping Corridors Implemented
- Green Fuels and Carbon Capture in Place





# UPDATED ROADMAP SUMMARY

DRAFT IN PROGRESS

		2016	2020	2022-25	2030	2040	2050
Scope 1 & Scope 2 Lead		Carbon footprint reduced 0%	Scope 1-2 Carbon footprint reduced 55%	60%	70%	90%	Carbon footprint reduced 100%
		<b>Baseline emissions established</b>	<b>Scope 1</b> <ul style="list-style-type: none"><li>Purchasing hybrid cranes only</li></ul> <b>Scope 2</b> <ul style="list-style-type: none"><li>LED lighting</li></ul>	<b>Scope 1</b> <ul style="list-style-type: none"><li>Purchase zero-emission terminal tractors</li><li>Purchase zero-emission pool cars</li><li>Pilot zero-emission forklifts and other CHE</li></ul> <b>Scope 2</b> <ul style="list-style-type: none"><li>Solar generation opportunities evaluated</li></ul>	<b>Scope 1</b> <ul style="list-style-type: none"><li>Replace and Purchase zero-emission forklifts and other CHE</li><li>Terminal expansions and optimal inland operations are green</li><li>Carbon Capture mechanisms</li></ul> <b>Scope 2</b> <ul style="list-style-type: none"><li>Solar and wind generation implemented where appropriate</li><li>Distributed clean electricity generation and resilient microgrids where value added</li><li>Electric utilities capacity expansion commensurate with mobility demands</li></ul>	<b>Scope 1</b> <ul style="list-style-type: none"><li>CHE Fleet Turnover to Zero-Emissions is Complete</li><li>Greenfield Terminals optimized for efficiency, minimal emissions</li></ul> <b>Scope 2</b> <ul style="list-style-type: none"><li>Electricity Augmented as needed</li></ul>	<b>Scope 1</b> <ul style="list-style-type: none"><li>Yard cranes hybrid or electric</li><li>Terminal tractors zero-emission</li><li>Other CHE zero-emission</li><li>Pool cars and trucks zero-emission</li><li>Residual emissions offset with nature-based solutions</li></ul> <b>Scope 2</b> <ul style="list-style-type: none"><li>Electricity 100% renewable since 2020, augmented as needed</li></ul>
Scope 3 & Beyond Value Chain Partner & Support			<b>Scope 3</b> <ul style="list-style-type: none"><li>Myriad supplier inventories unknown</li></ul> <b>Beyond Value Chain</b> <ul style="list-style-type: none"><li>GMEI documented emissions 2019</li></ul>	<b>Scope 3</b> <ul style="list-style-type: none"><li>Inventory carbon footprint of Port Houston procurement / suppliers</li><li>Develop strategies and tactics to align carbon neutrality</li><li>Identify &amp; Pilot carbon neutral construction materials</li><li>Tenant emission inventory</li><li>Employee emissions minimized</li><li>Encourage clean dredging/ DMPA</li></ul> <b>Beyond Value Chain</b> <ul style="list-style-type: none"><li>Facilitate pilot of zero-emission drayage trucks and electric/fuel infrastructure</li><li>Regional Drayage Strategies</li><li>Pilot Shore Power</li><li>Capture leading practices in ocean and harbor vessels</li><li>Grants e.g. MEGA, DERA, TERP</li><li>Define Green Corridors for USGC</li></ul>	<b>Scope 3</b> <ul style="list-style-type: none"><li>Purchasing carbon neutral materials</li><li>Maximized waste recycling</li><li>Tenant emissions strategies</li><li>Encouraging tenants having carbon neutral plans</li></ul> <b>Beyond Value Chain</b> <ul style="list-style-type: none"><li>Mature adoption of zero-emission drayage truck fleets and charging/fueling truck-stops</li><li>Encourage transition to carbon neutral container ships</li><li>Encourage low/zero-emission locomotives</li><li>Encourage transport shuttles, containers on barge or other tech</li><li>Encourage Hydrogen, Carbon capture projects and technologies</li></ul>	<b>Scope 3</b> <ul style="list-style-type: none"><li>Encourage carbon neutrality of: capital goods, professional services</li><li>Developing offsets</li><li>Encouraging sustainable investments</li></ul> <b>Beyond Value Chain</b> <ul style="list-style-type: none"><li>Shore Power maximized</li><li>Zero-emission vessels</li><li>Green Shipping Corridors</li><li>Encourage</li><li>Monitor transition to low/zero-emission locomotives</li></ul>	<b>Scope 3</b> <ul style="list-style-type: none"><li>Vessels, Trucks and Suppliers at carbon neutral / net zero standards</li><li>Remaining emissions offset</li><li>Investment profiles consistent with sustainability goals</li><li>Tenant operated terminals and facilities meet Net Zero standards</li></ul> <b>Beyond Value Chain</b> <ul style="list-style-type: none"><li>State of the art is zero emissions and/or carbon neutral technology and supplies for trucks, harbor vessels, ships, rail</li></ul>

\*All plans and projects subject to feasibility and business alignment – timing subject to technology development and commercialization cycles.



# THANK YOU

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PORT HOUSTON